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APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO	CONFIRMATION NO
09/914,621	12/26/2001	Xiaofiao Li	1038-1101MS/JB	8178

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EXAMINER
NGUYEN, QUANG

ART UNIT	PAPER NUMBER
2636	7

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/914,621	LI ET AL.	
	Examiner	Art Unit	
	Quang Nguyen, Ph.D.	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-24 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-24 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3
4) ☐ Interview Summary (PTO-413) Paper No(s) _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other.

DETAILED ACTION

Claims 1-24 are pending in the present application, and they are examined on the merits herein.

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

> The oath or declaration is defective because:
> Non-initialed and/or non-dated alterations have been made to the oath or declaration (see change in the Post Office Address of Mary E. Ewasyshyn). See 37 CFR 1.52(c).

Priority

Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

> An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification or in an application data sheet (37 CFR 1.78(a)(2) and (a)(5)).

Thus, Applicants claim for priority under 35 U.S.C. 120 to U.S. Application No. 09/262,927 is denied. Accordingly, the present pending claims are given at best the priority date of 03/03/2000.

Claim Objections

Claim 1 is objected to because of the term "RSV" should be spelled out at the first occurrence of the term.

Claim 17 is objected to because of the following informalities: the term "nucloetide" in line 2 of the claim is misspelled. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-24 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for:

(1) A plasmid vector for *in vivo* administration to a host, comprising: a nucleotide sequence encoding a respiratory syncytial virus (RSV) F protein lacking an autologous RSV F signal peptide sequence and including a nucleotide sequence encoding a heterologous signal peptide which enhances the level of expression of RSV F protein in the host; and a promoter sequence operatively coupled to the nucleotide sequence for expression of said RSV F protein in the host; an immunogenic composition comprising the same plasmid vector and a method of immunizing a host against disease caused by infection with RSV, which comprises administering to said host an effective amount of the same immunogenic composition;

(2) A method of using a nucleotide sequence encoding an RSV F protein lacking an autologous RSV F signal peptide sequence and including a heterologous signal

peptide which enhances the level of expression of RSV F protein, which comprises: isolating a gene encoding an RSV F protein having an autologous RSV F signal peptide sequence; substituting a nucleotide sequence encoding a heterologous signal peptide which enhances the level of expression of RSV F protein for the nucleotide sequence encoding the autologous RSV F signal peptide sequence to form said nucleotide sequence; operatively linking said nucleotide sequence to at least one control sequence to produce a plasmid vector, said control sequence directing expression of said RSV F protein when said plasmid vector is introduced into a host to produce an immune response to said RSV F protein; and introducing said plasmid vector into the host;

(3) A method of producing a vaccine for protection of a host against disease caused by infection with RSV, which comprises: isolating a first nuelcotide sequence encoding an RSV F protein having an autologous RSV F signal peptide sequence; substituting a nucleotide sequence encoding a heterologous signal peptide which enhances the level of expression of RSV F protein for the nucleotide sequence encoding the autologous RSV F signal peptide sequence to form a second nucleotide sequence; operatively linking said second nucleotide sequence to at least one control sequence to produce a plasmid vector, the control sequence directing expression of said RSV F protein when introduced into a host to produce an immune response to said RSV F protein; and formulating said plasmid vector as a vaccine for *in vivo* administration; and a vaccine produced by the same method;

does not reasonably provide enablement for ***any vector*** with the recited characteristics for *in vivo* administration to a host, an immunogenic composition

comprising the same, methods of immunizing a host against disease caused by RSV and for producing an immune response in a host to the RSV F protein using the same, and a method of producing ***any vector vaccine*** having the recited characteristics for protection of a host against disease caused by infection with RSV. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The factors to be considered in the determination of an enabling disclosure have been summarized as the quantity of experimentation necessary, the amount of direction or guidance presented, the state of the prior art, the relative skill of those in the art, the predictability or unpredictability of the art and the breadth of the claims. *Ex parte Forman*, (230 USPQ 546 (Bd Pat. Appl & Unt, 1986); *In re Wands*, 858 F.2d 731, 8 USPQ 2d 1400 (Fed. Cir. 1988)).

The instant claims are drawn to a vector for *in vivo* administration to a host, comprising a nucleotide sequence encoding an RSV F protein lacking an autologous RSV F signal peptide sequence and including a nucleotide sequence encoding a heterologous signal peptide which enhances the level of expression of RSV F protein in the host; and a promoter sequence operatively coupled to the nucleotide sequence for expression of said RSV F protein in the host; an immunogenic composition for *in vivo* administration to a host comprising the same vector; and methods for immunizing a host against disease caused by infection with respiratory syncytial virus (RSV) using an effective amount of the same immunogenic composition, for using the said nucleotide

sequence in the form of any vector for enhancing the level of expression of RSV F protein in a host to produce an immune response to the RSV F protein, for producing any vaccine non-replicating vectors for protection of a host against disease caused by RSV.

The instant specification is not enabled for such a broadly claimed invention for the following reasons.

(1) The breadth of the claims. The instant claims encompass ***any vector*** having the recited characteristics for *in vivo* administration into any host; an immunogenic composition comprising the same for *in vivo* administration into any host and methods of immunizing a host against disease caused by RSV and for producing an immune response in any host to the RSV F protein using the same, as well as a method of producing ***any vector vaccine*** having the recited characteristics for protection of any host against disease caused by infection with RSV. When read in light of the specification and as written, the sole purpose for any vector having the recited characteristics for *in vivo* administration to a host and for a method of using a nucleotide sequence encoding an RSV F protein having a heterologous signal peptide in the form of any vector for producing an immune response in a host is to attain therapeutic and/or prophylactic effects against diseases caused by infection with RSV as contemplated by Applicants.

(2) The state of the prior art and the unpredictability of the prior art. About the filing date of the present application, RSV was still known to be a difficult vaccination target and that the development of an effective RSV vaccine remains a challenge,

particularly with the lack of animal models that exhibit RSV disease or are fully permissive for RSV infection (Crowe, J.E., Vaccine S32-S37, 2002). Crowe notes that although recombinant vaccinia viruses that express F protein were immunogenic and protective in rodents, they were less immunogenic in chimpanzees and did not protect the lower respiratory tract of these animals against wild-type RSV challenge, and that the evaluation of adenovirus recombinant viruses expressing F protein failed to induce adequate level of protection against RSV (see section 3.4. on page S35). In a recent review on DNA and RNA-based vaccines, Leitner et al. (Vaccine 18:765-777, 2000) state "Although genetic vaccines have been significantly improved, they may not be sufficiently immunogenic for therapeutic vaccination of patients with infectious disease or cancer in clinical trials" (Abstract, page 765). Even with plasmid DNA vaccines, there are numerous factors determining the magnitude and the type of immune response induced by such vaccines. These include, the structure of the plasmid backbone, the amount of plasmid delivered, expression levels of the antigen, immunization schedule, route of immunization, target tissue, strain and age of the particular species utilized. It is well recognized that an animal model should correlate to the disease condition studied, and that results observed in an animal model system is not predictive of outcome or efficacy in applications in any species of animals, due to differences in anatomy, cell biology, genetics and immunology among the animals.

(3) The amount of direction or guidance provided. Apart from the teachings on the preparation of a plasmid vector having the recited characteristics, and the application of such a plasmid vector for protecting BALB/c mice from RSV infection of

the lungs (see examples 7-9), the instant specification fails to provide any guidance for a skilled artisan on the make and use of any other non-replicative vectors or any viral vectors having the same features, such that they are also capable of generating therapeutic and/or prophylactic effects to the same extent as the plasmid vector in mice, let alone in any host as encompassed by the instant claims. For example, would any non-plasmid vector having the same features be able to induce an effective anti-RSV Th1 immune response to yield the desired therapeutic and/or prophylactic effects? In light of the many factors involved in determining the magnitude and the type of immune responses induced in a host, particularly an effective immune response to yield the therapeutic and/or prophylactic effects against RSV, and the totality of the state of the RSV vaccine art at the filing date of the present application as discussed above, and with the lack of sufficient guidance provided by the present application it would have required undue experimentation for a skilled artisan to make and use the instant broadly claimed invention. Furthermore, the physiological art is recognized as unpredictable (MPEP 2164.03). With respect to the breadth of the instant invention, Applicants are also directed to the decision in *In re Shokal*, 113 USPQ 283 (CCPA 1957) wherein it is stated:

> It appears to be well settled that a single species can rarely, if ever, afford sufficient support for a generic claim. In re Soll, 25 C.C.P.A. (Patents) 1309, 97 F.2d 623, 38 USPQ 189; In re Wahlforss et al., 28 C.C.P.A. (Patents) 867, 117 F.2d 270, 48 USPQ 397. The decisions do not however fix any definite number of species which will establish completion of a generic invention and it seems evident there from that such number will vary, depending on the circumstances of particular cases. Thus, in the case of small genus such as the halogens, consisting of four species, a reduction to practice of three, or perhaps even two, might serve to complete the generic invention, while in the case of a genus comprising hundreds of species, a considerably larger number of reductions to practice would probably be necessary.

Additionally, the courts have also stated that reasonable correlation must exist between scope of exclusive right to patent application and scope of enablement set forth in the patent application (27 USPQ2d 1662 *Ex parte Maizel.*).

Accordingly, due to the lack of guidance provided by the specification regarding to the issues raised above, the unpredictability of the RSV vaccine art for attaining desired therapeutics and/or prophylactic effects, and the breadth of the claims, it would have required undue, unpredictable experimentation for one skilled in the art to make and use the instant broadly claimed invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-9 and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Li et al. (J. Exp. Med. 188:681-688, 1998; IDS).

Li et al. teach the preparation of optimized plasmid DNA vectors expressing the Respiratory syncytial virus (RSV) fusion F protein (DNA-F), and demonstrate that they are as effective as live RSV in mice at inducing neutralizing antibody and cytotoxic T lymphocyte responses, protection against infection (see abstract). The plasmid vector constructs (pXL1-pXL4) include expression of full length and truncated RVS F (without a transmembrane coding region) proteins under the control of CMV promoter in the

presence or absence of the rabbit β-globin intron II sequence upstream of the F-protein encoding sequence (see Construction of plasmids expressing the RSV F proteins on page 682, col. 1; and page 683). For intramuscular immununization, each of the plasmid vectors was injected into mice 2 X 50 μg (1 μg/μl in phosphate buffered solution or PBS which is a pharmaceutically acceptable carrier), and for intradermal immunization 100 μg of pXL2 was injected near the base of the tail (page 682, col. 2, first paragraph). Li et al. teach specifically that further modification of the above vectors can be made by using a more effective signal peptide (which is not an autologous signal peptide of F protein) for enhanced F protein expression/secretion so that the pre-treatment step of muscle tissue with cardiotoxin (to increase DNA uptake and enhance immune response) before immunization with DNA F-vectors can be eliminated (page 684, col. 2, first paragraph).

Accordingly, the teachings of Li et al. meet every limitation of the instant claims. Therefore, Li et al. anticipate the instant claimed invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-2 and 13-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (J. Exp. Med. 188:681-688, 1998; IDS) in view of Li et al. (WO 99/04010; IDS) and Lee et al. (Molecules and Cells 8:444-451, 1998; IDS).

Within the enabled scope of the presently claimed invention, Li et al. (J. Exp. Med.) teach the preparation of optimized plasmid DNA vectors expressing the Respiratory syncytial virus (RSV) fusion F protein (DNA-F), and demonstrate that they are as effective as live RSV in mice at inducing neutralizing antibody and cytotoxic T lymphocyte responses, protection against infection (see abstract). The plasmid vector constructs (pXL1-pXL4) include expression of full length and truncated RVS F (without a transmembrane coding region) proteins under the control of CMV promoter in the presence or absence of the rabbit β-globin intron II sequence upstream of the F-protein encoding sequence (see Construction of plasmids expressing the RSV F proteins on page 682, col. 1; and page 683). For intramuscular immununization, each of the plasmid vectors was injected into mice 2 X 50 μg (1 μg/μl in phosphate buffered solution or PBS which is a pharmaceutically acceptable carrier), and for intradermal immunization 100 μg of pXL2 was injected near the base of the tail (page 682, col. 2,

first paragraph). Li et al. teach specifically that further modification of the above vectors can be made by using a more effective signal peptide (which is not an autologous signal peptide of F protein) for enhanced F protein expression/secretion so that the pre-treatment step of muscle tissue with cardiotoxin (to increase DNA uptake and enhance immune response) before immunization with DNA F-vectors can be eliminated (page 684, col. 2, first paragraph).

Li et al. (J. Exp. Med.) do not explicitly teach the use of HSV-1 gD signal sequence as the effective signal peptide, or substituting a nucleotide sequence encoding the autologous RSV F signal peptide sequence with a nucleotide sequence encoding a heterologous signal peptide, preferably HSV-1 gD signal peptide, for the modified plasmid vectors.

However, at the effective filing date of the present application, Li et al. (WO 99/04010) already teach the preparation of a plasmid vector encoding a G protein of RSV, wherein a heterologous viral or eukaryotic signal peptide such as human tissue plasminogen activator signal peptide replaces the endogenous signal peptide of the RSV G protein (line 31 of page 15) and the use of such a vector to immunize a host against RSV infection.

Additionally, Lee et al. teach the replacement of each of the signal sequences of hepatitis C virus (HCV) envelope proteins with the signal sequence of herpes simplex virus type-1 (HSV-1) gD for an efficient expression and secretion of HCV envelope proteins in an HCV envelope plasmid vector-based immunization approach (see abstract, and Fig. 1). Lee et al. further note that the N-terminal fusion of a signal

sequence from gD into HIV-1 gp160 has been shown to be expressed and secreted efficiently (page 446, col. 1, last 3 lines).

Accordingly, it would have been obvious for an ordinary skilled artisan to modify the plasmid vectors and methods taught by Li et al. (J. Exp. Med.) by substituting a nucleotide sequence encoding the autologous RSV F signal peptide sequence with a nucleotide sequence encoding a heterologous signal peptide, including the HSV-1 gD signal peptide for enhancing the F protein expression/secretion in a host in light of the teachings of Li et al. (WO 99/04010) and Lee et al. This is because Li et al. (J. Exp. Med.) specifically teach to use a more effective signal peptide for enhanced F protein expression/secretion in a host so that the pre-treatment step with cardiotoxin could be avoided, and that the use of HSV-1 gD signal peptide for an efficient expression and secretion of HIV-1 gp160 and HCV envelope proteins has been demonstrated in the art as taught by Li et al. (WO 99/04010), coupled with the teachings of Li et al. (WO 99/04010) to use a heterologous viral or eukaryotic signal peptide such as human tissue plasminogen activator signal peptide for replacing the endogenous signal peptide of the RSV G protein (line 31 of page 15) in the preparation of a plasmid vector and the use of such a vector to immunize a host against RSV infection. The modified plasmid vectors containing HSV-1 gD signal encoded sequence in place of the sequence coding for the autologous RSV F signal peptide would have the same features as the plasmid vector p82M35B.

One of ordinary skilled artisan would have been motivated to carry out the above modification because Li et al. (J. Exp. Med.) specifically teach to use a more effective

signal peptide for enhanced F protein expression/secretion in a host so that the pre-treatment step with cardiotoxin could be avoided, and that the use of HSV-1 gD signal peptide for an efficient expression and secretion of HIV-1 gp160 and HCV envelope proteins has been demonstrated in the art as taught by Li et al. (WO 99/04010).

One of ordinary skilled artisan would have a reasonable expectation of success because the use of HSV-1 gD signal peptide for an efficient expression and secretion of HIV-1 gp160 and HCV envelope proteins has already been demonstrated in the art as taught by Li et al. (WO 99/04010)

Therefore, the claimed invention as a whole was *prima facie* obvious in the absence of evidence to the contrary.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-24 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-25 of U.S. Patent No.

6,083,925. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

The claims of the present invention are drawn to methods for immunizing a host against disease caused by infection with RSV, for producing an immune response to an RSV F protein using a vector comprising a nucleotide sequence encoding an RSV F protein lacking an autologous RSV F signal peptide sequence and including a heterologous signal peptide which enhances the level of expression of RSV F protein, for producing a vaccine for protection of a host against disease caused by infection with RSV, a vaccine produced by the same method, as well as a vector and an immunogenic composition comprising the same nucleotide sequence for *in vivo* administration to a host of the present invention.

Claims of the issued U.S. Patent No. 6,083,925 teach methods of immunizing a host against disease caused by infection with RSV, of enhancing the level of expression of RSV F protein to produce an immune response in a host using a plasmid vector comprising a nucleotide sequence encoding an RSV F protein fragment that generates antibodies and/or cytotoxic T-lymphocytes that specifically react with RSV F protein, said RSV F protein fragment lacking an autologous RSV F signal peptide sequence and including a sequence encoding a heterologous signal peptide which enhances the level of expression of RSV F protein, and a promoter sequence operatively coupled to said nucleotide sequence for expression of said RSV F protein fragment in the host, and methods for producing a vaccine for protection of a host against disease caused by infection with RSV in the issued U.S. Patent No. 6,083,925.

Since the method and composition claims of the present invention are generic to the methods of using a plasmid vector comprising a nucleotide sequence encoding an RSV F protein fragment that generates antibodies and/or cytotoxic T-lymphocytes that specifically react with RSV F protein, said RSV F protein fragment lacking an autologous RSV F signal peptide sequence and including a sequence encoding a heterologous signal peptide which enhances the level of expression of RSV F protein in the issued U.S. Patent No. 6,083,925 (e.g., a vector is generic to a plasmid vector, and an encoded RSV F protein encompasses an RSV protein fragment), a patent to the genus would, necessarily, extend the rights of the species or sub-genus should the genus issue as a patent after the species or subgenus.

Claims 1-24 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No. 6,486,135. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons.

The claims of the present invention are drawn to methods for immunizing a host against disease caused by infection with RSV, for producing an immune response to an RSV F protein using a vector comprising a nucleotide sequence encoding an RSV F protein lacking an autologous RSV F signal peptide sequence and including a heterologous signal peptide which enhances the level of expression of RSV F protein, for producing a vaccine for protection of a host against disease caused by infection with RSV, a vaccine produced by the same method, as well as a vector and an immunogenic

composition comprising the same nucleotide sequence for *in vivo* administration to a host of the present invention.

Claims of the issued U.S. Patent No. 6,486,135 teach a method of using a gene encoding an RSV F protein lacking the transmembrane region to produce an immune response in a host, including the gene encoding an RSV F protein lacking an autologous RSV F signal peptide sequence and includes a sequence encoding a heterologous signal peptide in the form of a plasmid vector which enhance the level of expression of RSV F protein in a host.

Since the method and composition claims of the present invention are generic to the method of using a plasmid vector comprising a nucleotide sequence encoding an RSV F protein lacking a transmembrane region, said RSV F protein lacking an autologous RSV F signal peptide sequence and including a sequence encoding a heterologous signal peptide which enhances the level of expression of the RSV F protein in a host in the issued U.S. Patent No. 6,486,135 (e.g., a vector is generic to a plasmid vector, and an encoded RSV F protein encompasses an RSV protein that lacks a transmembrane region), a patent to the genus would, necessarily, extend the rights of the species or sub-genus should the genus issue as a patent after the species or subgenus.

Conclusions

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang Nguyen, Ph.D., whose telephone number is (703) 308-8339.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's mentor, Gerald Leffers, Jr., Ph.D., may be reached at (703) 305-6232, or SPE, Remy Yucel, Ph.D., at (703) 305-1998.

Quang Nguyen, Ph.D.

PATENT EXAMINER
Gerald G. Leffers Jr.
A.U. 1636